Trend Study 25A-5-04

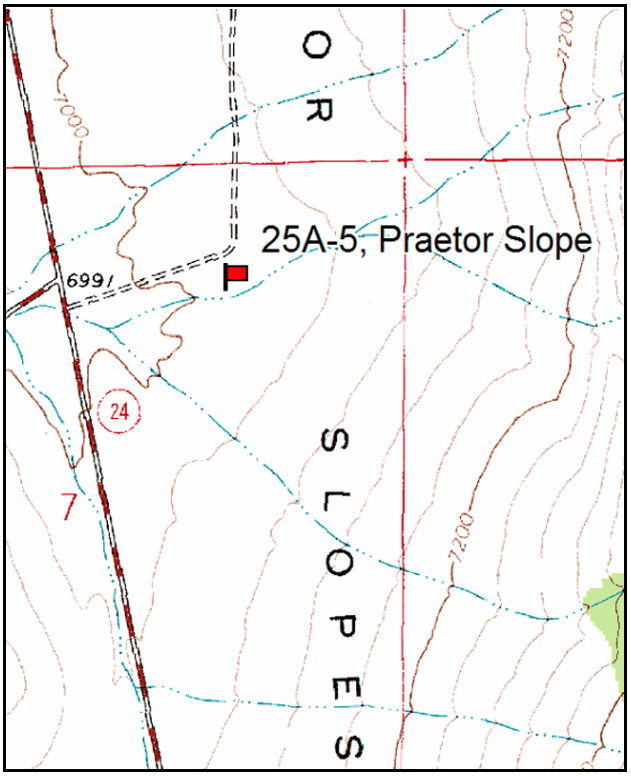
Study site name: Praetor Slope . Vegetation type: Harrowed Sagebrush/Grass.

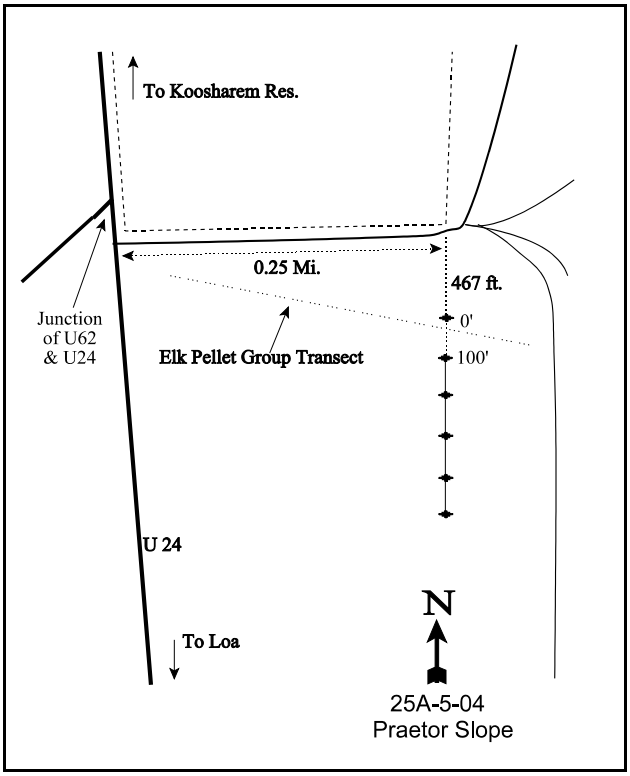
Compass bearing: frequency baseline 168 degrees magnetic.

Frequency belt placement: line 1 (11ft), line 2 (34ft), line 3 (59ft), line 4 (71ft), line 5 (95ft).

LOCATION DESCRIPTION

From the junction of U-62 and U-24 south of Koosharem Reservoir, proceed south for 25 yards and turn left onto a dirt road. Go through the gate and up the road 0.25 miles to where the road turns at the fence corner. Walk 467 feet due south from the fence corner to the top of a small rise. The baseline starts here, and is marked by a 5' steel fence post with a blue browse tag #55.





Map Name: Burrville, Utah

Diagrammatic Sketch

Township 26S , Range 1E , Section 7

GPS: NAD 27, UTM 12S 4268970 N, 427257 E

DISCUSSION

Praetor Slope - Trend Study No. 25A-5

The Praetor Slope trend study surveys deer and elk winter range on BLM land south of Koosharem Reservoir. This is an area of 1,440 acres that was chained and seeded in 1964 and 3,000 acres were harrowed and seeded in the fall of 2002. The harrow removed the study site, but was reestablished in 2004 at the same location. The study is located at an elevation of about 7,000 feet on the east side of Plateau Valley. The aspect is west with a gentle slope of 2-5%. Average yearly precipitation is low, with just over 9 inches measured at Koosharem (elevation 6,900 feet, 3 miles southwest). The transect is 300 yards from state highway U-24. The area is on the Fishlake allotment with sheep use scheduled from either June 1 to June 30 (600 sheep) or October 25 through November 15 (1,400 sheep) on a rotating basis. Pellet group data from 1999 estimated 12 deer (30 ddu/ha) and 22 sheep days use/acre (56 sdu/ha). Elk do not appear to be using the area with only 1 pellet group sampled in 1999. Pellet group data from 2004 estimated 4 elk days use/acre (10 edu/ha). Rabbits appear to be abundant on the site.

Although rocky throughout the profile, the soil is fairly deep with an estimated effective rooting depth of nearly 18 inches. The soil is a loam in texture and has a slightly alkaline pH (7.6). Organic matter is relatively low at 1.7%, with most of the litter present under the sagebrush crowns. Bare ground was low at 11% in 1999, but increased to 20% by 2004. Pavement and rock cover combined are high at 36%. Erosion is not severe with the gentle slope and relatively high cover from crested wheatgrass. The erosion condition class determined soil movement as stable in 2004.

Wyoming big sagebrush dominated the site until the harrow treatment in 2002. In 1999, it provided all of the browse cover and contributed to 42% of the total vegetation cover. By 2004, sagebrush cover was reduced to 1% of the total vegetation cover. Density was reduced from 4,420 plants/acre in 1999 to 380 in 2004 and 37% of the remaining population was classified as dying. The majority of the plants were moderate to heavily hedged in all three sampled years until 2004 where only light hedging was observed. The only other browse species present in the area are a few pricklypear cactus, and a population of rubber rabbitbrush in the bottom of a wash. Antelope bitterbrush and forage kochia were included in the harrow seed mix, but neither were observed in 2004. There is no protective cover for wildlife near the transect.

Crested wheatgrass is the dominate species on this site and made up 86% of the total vegetation cover in 2004. Other grasses observed in 2004 were intermediate wheatgrass (seeded), western wheatgrass, and sandberg bluegrass. Another 13% of the total vegetation cover comes from forbs. Lewis flax made up 35% of the forb cover and was in full bloom in the spring. Before the harrow treatment, bur buttercup was the only forb found on the site. It was still the most abundant forb in 2004, but 10 other species were observed, mostly annuals. A total of three grasses and four forbs were seeded and the only dominate grass was crested wheatgrass. The only dominate forb was Lewis flax, the other three were either not found or only a small trace was found.

1985 APPARENT TREND ASSESSMENT

Overall range trend appears stable. Erosion of the top soil and along trails has occurred, but appears to have stabilized with a high percentage of pavement on the surface. Continuous spring grazing pressure has most likely depleted the desirable native perennial grasses and forbs. At present, the vegetative composition is simple, but both sagebrush and crested wheatgrass are vigorous and producing well. As long as care is taken to protect against overgrazing by livestock in the spring, current management is probably adequate to maintain the range in fair condition.

1991 TREND ASSESSMENT

The trend for soil is stable to slightly down with an increase in percent bare soil and a decrease in percent litter cover. Sagebrush density has gone down (32%) and percent decadency has increased from 8 to 52%. The high sagebrush densities, competition with itself, and the drought have been the main reason for this increase in percent decadency. Another problem with the area is the low average annual precipitation (effect of a rain shadow) even with a relatively high elevation of 6,900 feet. The herbaceous understory is made up of basically one species, crested wheatgrass which appears to be stable at this time.

TREND ASSESSMENT
soil - stable (3)
browse - slightly down (2)
herbaceous understory - stable (3)

1999 TREND ASSESSMENT

Trend for soil is stable. Bare ground and litter cover both decreased, with rock and pavement cover increasing. Erosion is minimal at the site due to the gentle slope and high cover from crested wheatgrass. Trend for browse is stable. The population of Wyoming big sagebrush has declined slightly since 1991, however much of the change is because the sample size for browse has more than tripled and now gives significantly better estimates for browse which usually has discontinuous and/or clumped distributions. More importantly, now the population shows a significantly lower percent decadency, lower proportion of decadent plants classified as dying, and improved vigor. Use remains moderate to heavy on the majority of the population. Trend for the herbaceous understory is stable, but lacking in diversity. Crested wheatgrass is overly dominant with other grasses and forbs being scarce. The Desirable Components Index rated this site as good with a score of 55 due to moderate shrub cover, few young shrubs, but good perennial grass cover.

TREND ASSESSMENT
soil - stable (3)
browse - stable (3)
herbaceous understory - stable (3)
winter range condition (DC Index) - 55 (good) Wyoming big sagebrush type

2004 TREND ASSESSMENT

Trend for soil is stable. Bare ground relative cover increased from 11% to 18% from 1999 to 2004 due to the two-way Dixie harrow treatment. Perennial grasses are the dominate species and provides good protective cover for the soil. Trend for the key browse Wyoming big sagebrush is down. The two-way harrow treatment removed all but 1% of the sagebrush cover. A few seedlings and young plants were observed, but overall density is very low and 37% were classified as dying. Trend for the herbaceous understory is slightly up. Crested wheatgrass sum of nested frequency actually decreased significantly after the two-way Dixie harrow treatment, however there are now three other grasses being sampled. Seeded forbs have helped diversify the forb population from only one small annual species previously observed. The Desirable Components Index rated this site as fair with a score of 40 due to low shrub cover, few young shrubs, but good perennial grass and forb cover.

TREND ASSESSMENT
soil - stable (3)
browse - down (1)
herbaceous understory - slightly up (4)
winter range condition (DC Index) - 40 (fair) Wyoming big sagebrush type

HERBACEOUS TRENDS --
Management unit 25A, Study no: 5

Type	Species	Nested Frequency				Average Cover %	
		'85	'91	'99	'04	'99	'04
G	Agropyron cristatum	$_{b}$329	$_{b}$316	$_{b}$311	$_{a}$269	16.31	27.72
G	Agropyron intermedium	-	-	-	8	-	.09
G	Agropyron smithii	-	-	-	3	-	.00
G	Poa secunda	-	-	-	2	-	.00
G	Sitanion hystrix	1	2	-	-	-	-
G	Stipa lettermani	-	3	1	-	.00	-
Total for Annual Grasses		0	0	0	0	0	0
Total for Perennial Grasses		330	321	312	282	16.31	27.82
Total for Grasses		330	321	312	282	16.31	27.82
F	Antennaria rosea	5	-	-	-	-	-
F	Arabis spp.	-	1	-	-	-	-
F	Astragalus beckwithii	-	4	-	-	-	-
F	Astragalus miser	6	10	-	7	-	.09
F	Chenopodium fremontii (a)	-	-	-	3	-	.00
F	Erigeron spp.	6	3	-	-	-	-
F	Eriogonum spp.	-	1	-	-	-	-
F	Gayophytum ramosissimum(a)	-	-	$_{a}$-	$_{b}$11	-	.07
F	Linum lewisii	$_{a}$-	$_{a}$-	$_{a}$-	$_{b}$70	-	1.44
F	Microsteris gracilis (a)	-	-	-	7	-	.01
F	Penstemon spp.	-	-	-	1	-	.03
F	Phlox longifolia	$_{a}$-	$_{c}$57	$_{a}$-	$_{b}$15	-	.06
F	Ranunculus testiculatus (a)	-	-	$_{a}$29	$_{b}$185	.15	2.07
F	Sanguisorba minor	-	-	-	2	-	.00
F	Sphaeralcea grossulariaefolia	$_{a}$-	$_{a}$-	$_{a}$-	$_{b}$16	-	.27
F	Trifolium spp.	$_{b}$18	$_{b}$33	$_{a}$-	$_{a}$-	-	-
Total for Annual Forbs		0	0	29	206	0.15	2.17
Total for Perennial Forbs		35	109	0	111	0	1.90
Total for Forbs		35	109	29	317	0.15	4.08

Values with different subscript letters are significantly different at alpha = 0.10

BROWSE TRENDS --
Management unit 25A, Study no: 5

Type	Species	Strip Frequency '99	Strip Frequency '04	Average Cover % '99	Average Cover % '04
B	Artemisia tridentata wyomingensis	90	16	12.08	.31
B	Leptodactylon pungens	0	1	-	-
Total for Browse		90	17	12.08	0.31

CANOPY COVER, LINE INTERCEPT --
Management unit 25A, Study no: 5

Species	Percent Cover '04
Artemisia tridentata wyomingensis	.33
Leptodactylon pungens	.13

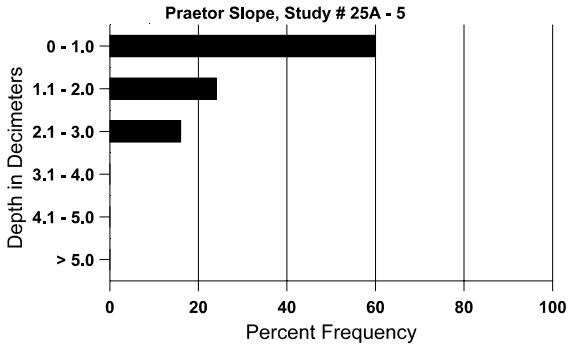
BASIC COVER --
Management unit 25A, Study no: 5

Cover Type	Average Cover % '85	'91	'99	'04
Vegetation	4.75	4.75	25.31	31.67
Rock	5.00	13.25	12.26	19.76
Pavement	24.50	17.75	29.79	16.14
Litter	44.75	37.00	21.65	25.97
Cryptogams	0	0	1.10	0
Bare Ground	21.00	27.25	11.23	20.52

SOIL ANALYSIS DATA --
Management unit 25A, Study no: 5, Study Name: Praetor Slope

Effective rooting depth (in)	Temp °F (depth)	pH	%sand	%silt	%clay	%0M	PPM P	PPM K	ds/m
17.8	67.3 (9.8)	7.6	36.0	39.1	24.9	1.7	14.7	361.6	0.9

Stoniness Index



PELLET GROUP DATA --
Management unit 25A, Study no: 5

Type	Quadrat Frequency		Days use per acre (ha)	
	'99	'04	'99	'04
Sheep	8	-	22 (56)	-
Rabbit	66	45	-	-
Elk	1	2	1 (2)	4 (10)
Deer	12	1	12 (30)	-
Cattle	1	-	-	-

BROWSE CHARACTERISTICS --
Management unit 25A, Study no: 5

		Age class distribution (plants per acre)					Utilization					
Year	Plants per Acre (excluding seedlings)	Seedling	Young	Mature	Decadent	Dead	% moderate	% heavy	% decadent	% dying	% poor vigor	Average Height Crown (in)
Artemisia tridentata wyomingensis												
85	**8265**	733	3533	4066	666	-	39	48	8	-	6	17/21
91	**5599**	-	266	2400	2933	-	65	8	52	7	24	16/18
99	**4420**	-	60	3020	1340	540	62	23	30	11	11	21/28
04	**380**	20	40	200	140	-	0	16	37	37	37	13/16
Atriplex canescens												
85	**0**	-	-	-	-	-	0	0	-	-	0	-/-
91	**0**	-	-	-	-	-	0	0	-	-	0	-/-
99	**0**	-	-	-	-	-	0	0	-	-	0	9/12
04	**0**	-	-	-	-	-	0	0	-	-	0	-/-

		Age class distribution (plants per acre)					Utilization					
Year	Plants per Acre (excluding seedlings)	Seedling	Young	Mature	Decadent	Dead	% moderate	% heavy	% decadent	% dying	% poor vigor	Average Height Crown (in)
Leptodactylon pungens												
85	**0**	-	-	-	-	-	0	0	-	-	0	-/-
91	**0**	-	-	-	-	-	0	0	-	-	0	-/-
99	**0**	-	-	-	-	-	0	0	-	-	0	-/-
04	**20**	-	-	20	-	-	0	0	-	-	0	5/7
Opuntia spp.												
85	**66**	-	-	66	-	-	0	0	-	-	0	6/9
91	**66**	-	-	66	-	-	0	0	-	-	0	2/2
99	**0**	-	-	-	-	-	0	0	-	-	0	-/-
04	**0**	-	-	-	-	-	0	0	-	-	0	-/-